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Harvest of Planted Rainbow Trout of Catchable Size from Five Reaches of Henry's Fork, Idaho[1]

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Abstract.-Harvest of planted rainbow trout (Salmo gairdnen) of catchable size varied greatly in the study sections of the Henry's Fork. Returns to the creel of a single strain of rainbow trout were correlated with fishing effort. For the range of returns (low to high) from the Henry's Fork, it cost from about $109 to $7 to put a kilogram of hatchery trout in the creel. To maximize efficiency of catchable-trout programs, biologists should monitor catches from all unique reaches within a contiguous river system.

It is well documented that unique strains of hatchery catchable trout do not perform similarly in all systems (Moring 1982; Dwyer and Piper 1984). Moring (1982) further emphasized that, due to fiscal constraints that many resource management agencies face, it is imperative that efficiency of stocking programs be improved. Matching a strain of trout to the specific environmental conditions has been the focus of recent researchers (Hudy and Berry 1983). In addition, an increasing amount of effort has been made to evaluate the hatchery product itself (Heimer et al. 1985).

The Henry's Fork of the Snake River is a very popular trout fishery located in eastern Idaho (Figure 1). It lies along one of the major access routes to Yellowstone National Park and receives considerable national attention as a blue ribbon trout fishery in the Harriman Ranch area. The fishery is mostly for wild rainbow trout (*Salmo gairdneri*) from below Island Park Dam to the confluence of the Henry's Fork with Warm River. However, hatchery rainbow trout are planted in the Henry's Fork of the Snake River to supplement two wild rainbow trout populations-above Island Park Reservoir and below Lower Mesa Falls (Figure 1).

Returns to the creel of hatchery rainbow trout were one facet of an ongoing study to evaluate the fisheries and fish populations of the Henry's Fork (Coon 1977; Rohrer 1981). A creel survey was initiated on various reaches of the Henry's Fork in 1976 and continued through 1982, although all sections were not surveyed each year. All hatchery rainbow trout were reared at Idaho's Ashton Hatchery and were from domestic brood stock origin. Hatchery-reared catchable-size fish (mean total length, 275 mm) were easily differentiated from wild trout in the creel by the prominent erosion of the dorsal, ventral, and pectoral fins. The size of rainbow trout stocked each year was generally similar during the study period. This report focuses on creel data collected in 1976, 1977, and 1980.

Harvest of Hatchery Fish

The harvest of hatchery rainbow trout ranged from 3% of the plants in section 1 in 1976 to 46%

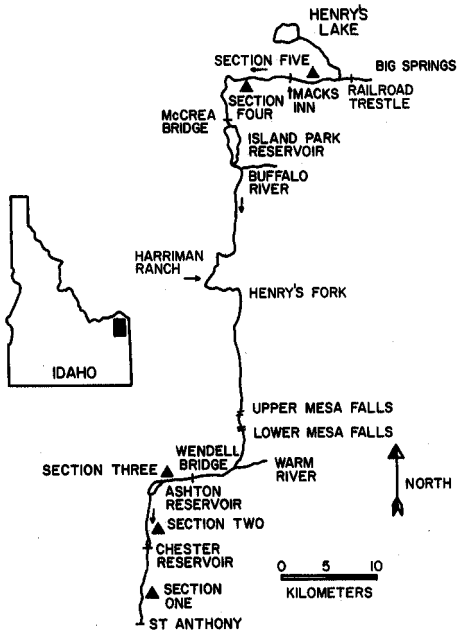

FIGURE 1.-Location of the five study sections (▲) on the Henry's Fork of the Snake River, Idaho.

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Table 1.-Numbers of catchable-size hatchery rainbow trout released into and harvested from the Henry's Fork of the Snake River, Idaho, in 1976, 1977, and 1980.

Stream Section	Number released			Estimated harvest			Percent return			Percent of total trout harvest		
	1976	1977	1980	1976	1977	1980	1976	1977	1980	1976	1977	1980
1	13,000		7,050	378		876	3		12	5		11
2	14,450		11,000	2,534		976	18		9	18		12
3	20,645		600	1,943		123	9		21	25		4
4		23,900			5,536			23			35	
5		16,150			7,377			46			44	

in section 5 in 1977 (Table 1). Returns from the lower sections generally were less than those from the upper reaches of the Henry's Fork. The harvest of hatchery rainbow trout varied from 4 to 44% of the total trout harvested.

Coon (1977, 1978) found that section 5 had the highest angler effort (3,226 h/km) among the study reaches during the season. Section 1 received the lowest fishing pressure (779 h/km) during the study period. On Henry's Fork, apparently, the number of planted rainbow trout returned to the creel depends upon fishing effort. Return to creel of the same strain of hatchery catchable fish was highly variable within the contiguous river system.

Management Implications and Discussion

The number of trout stocked in the United States exceeds 70 x 10^6/year (Helfrich and Kendall 1982). There is increasing emphasis on trout strain evaluations to maximize returns for the dollars spent rearing and stocking the fish. Many agencies are concentrating on improving the efficiency of catchable-trout programs by using stocks of trout that field high returns.

It is important in strain and performance evaluation studies of hatchery catchable fish in flowing water for fishery managers to look at returns from several sections throughout a stream. Habitat, angler effort, and angler profile can vary greatly within a single contiguous stream. Our study on the Henry's Fork of the Snake River was designed to look at the performance of a single strain within a system. Had we confined our study only to the upper reaches of the river we might have concluded that returns to creel for our product were acceptable. However, the findings indicated that returns to creel for hatchery rainbow trout were highly variable and probably depend most on angler effort, as noted above.

According to Neil DeGulio (Assistant Fish Hatcheries Manager, personal communication), it cost the Idaho Department of Fish and Game about $3.30/kg in 1984 to raise catchable-size rainbow trout. For the extremes of returns from the Henry's Fork-3% in section 1 in 1976; 46% in section 5 in 1977-it cost about $109.03 and $7.18 (in 1984 dollars), respectively, to put a kilogram of hatchery trout in the creel. While cost should not be the only criterion for measuring success in a hatchery program of this nature, it is one way of measuring efficiency. Maximizing the return of the hatchery product in our situation might be handled by either of two options: (1) stock more catchable fish in areas of high angler effort (eliminating or decreasing the program in low-use areas), or (2) direct anglers to areas that are "underutilized."

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